

President - Tom Scorsone, KC2FCP
Secretary - Steve VanSickle, WB2HPR

Vice-President - Nick Field, KD2JCR
Treasurer, Webmaster & Newsletter Editor - Bryan Jackson, W2RBJ
Board Members: David Jaegar, Jr., K2DEJ - Russ Greenman, WB2LXC - Dave Gillette, KC2RPU

Amateur Radio Hit By Coronavirus EGARA Hamfest 2020 Moved to August

The coronavirus outbreak seems to have left no one immune, including Amateur Radio. Cancellations of dozens of meetings and events have been widespread -- including the cancellation of the Dayton Hamvention, the Mecca of Ham Radio. At the direction of health officials, EGARA is also taking prudent precautions, including moving its 2020 Hamfest from May 9th to August 29th.

The club also had to cancel its May 16th FCC exam session at the East Greenbush Library after it announced that use of its meeting rooms would be halted for the foreseeable future. In addition, the club canceled its regular March membership meeting and is planning on holding its April meeting on the air, using its 147.270 repeater (see story below).



"We have moved our annual Hamfest to August 29th in hopes the current crisis will have subsided by then" said club President Tom Scorsone, KC2FCP. "Fortunately, the East Greenbush Fire Department was very understanding and helpful in allowing us to change the date for use of its meeting facilities. Their cooperation is greatly appreciated."

-continued on page 3-

In This Issue

Page 1 - Virus Hit Hams / On Air Meeting
Page 2 - Club Elections / Field Day 2020
Page 5 - On the Beam News & Notes
Page 6 - Meeting Minutes / ARRL Halts Visits
Page 7 - The Making of Radio
Page 9 - Message from Ria / Ham Radio Gets Renewed Attention
Page 10 - History of Ham Radio: Armstrong
Page 12 - On Air Meeting Agenda
Page 14 - Calendar / Buy, Swap, Sell / Pro Tip

April Club Meeting to be "On the Air" Agenda Will Include Election of Officers

EGARA's April membership meeting will be held on the air using the club's repeater on 147.270 Mhz starting at 7 pm. Each member will be asked to check in with Net Control. Once check-ins are complete, club officers will give their reports, followed by the on-air election of club officers (see page 12 for info).

The slate of candidate includes: President - Bryan Jackson, W2RBJ; Vice President - Nick Field, KD2JCR; Secretary - Steve VanSickle, WB2HPR; Treasurer - Don Mayotte, KB2CDX. As each is running unopposed, it is anticipated that the slate will be elected by acclamation (see story on page 2).

Following the election, club members will be called on individually to ask questions or offer comments.

A complete meeting agenda and meeting protocols will be sent to each member prior to the one-air meeting. Members are reminded that their radios must be programmed with a PL tone of 94.8 to access the 147.270 repeater.

Next Membership Meeting - April 8, 2020 - on 147.270 Repeater

Slate of Candidates Set for April Club Elections

April brings with it the annual election of club officers and candidates have now been nominated for each of the four open offices.

For the first time in 19 years, the office of President is set to change, with Bryan Jackson, W2RBJ, running for the top spot. Jackson, who has served as Treasurer, will seek to replace long-time President Tom Scorsone, KC2FCP, who has decided not to run for re-election. Tom will assume the role of President Emeritus and continue to provide guidance and advice to the club and its officers.

Nick Field, KD2JCR, will seek re-election as the Vice President, and Steve VanSickle, WB2HPR will likewise seek another term as Secretary. Seeking election as Treasurer will be Don Mayotte, KB2CDX. It is his first time running for a club office.

Members of the board will not be on the ballot this year, as their three-year terms run until 2021. However, members will be asked to approve a proposal to stagger board elections so that one board seat will be open every year. The plan is designed to provide a greater opportunity for members to participate in the club's management.

To facilitate the staggered election, it's proposed that next year's board election fill one seat for a one-year term, a second seat for a two-year term, and a third seat for a three-year term. As the seats come up for re-election in the future, each term will revert to a full three-years.

As the slate of candidates is unopposed, they will be elected by acclamation, with the club Secretary casting a single deciding vote. The election will take place during the club's on-air membership meeting on April 8th using the 147.270 repeater. All members will also be informed by email.



**Tom Scorsone, KC2FCP
will conclude two
decades of service as
EGARA President**

Field Day 2020 — A Time to Adapt



Field Day is set for June 27-28, but concerns about coronavirus will likely require substantial changes. ARRL has offered some guidance on how to adapt in this unprecedented time of social distancing and uncertainty.

"Due to the unique situation presented this year, this can be an opportunity for you, your club, and/or group to try something new," ARRL Contest Manager Paul Bourque, N1SFE, said. "Field Day isn't about doing things the same way year after year. Use this year to develop and employ a new approach that is in line with the current circumstances."

Social distancing and state and local requirements very likely will impact just how — and even whether — hams are able to participate in Field Day this year. Information and guidance offered by the Centers for Disease Control and Prevention (CDC) will be important to follow. If social distancing means that Class A with a 30-member team won't work this year, other options will have to be explored. Part of the Field Day concept has always been about adapting operation to meet the situation at hand. Field Day is an emergency communication demonstration, and rules are flexible enough to allow individuals and groups to adjust their strategies in a way that addresses their needs.

There are several options that Egara is exploring. One possibility is to have club members to operate from their home stations on using commercial power as Class D. These stations may only count contacts made with Class A, B, C, E and F Field Day stations. Another option is home stations on emergency power as Class E. These stations can contact any class.

One big impact this year will be a decline in public visibility and any interaction with the visitors. Local and served agency officials may be unwilling to visit, which is understandable under the circumstances.

EGARA anticipates developing its Field Day Plans no later than early June so its members can prepare to participate.

EGARA Hamfest Moves to August 29th

(continued from page 1)

EGARA Treasurer Bryan Jackson, W2RBJ, said the change of date should actually work in favor of the club's Hamfest.

"The extra time will allow us to extend promotion of our Hamfest and seek out additional sponsors while also giving us the opportunity to further promote the many sponsors who have already signed on," he said. "Plus, with many other Hamfests being canceled -- including Dayton -- I think we may see a record turnout at ours this year because of pent-up demand."

Supporting the prediction of a record turnout is the fact that Egara currently has prizes worth approximately \$3,500 for giveaways. Once again, the Grand Prize will be an HF/6 meter transceiver given away jointly by the club and **KJI Electronics**. There will also be several HT radios provided by **Wouxun**, including its latest DMR/analog models. The club will also raffle off tri-band Baofeng HT radios in cooperation with **B-TECH**, Baofeng's official U.S. distributor. These HTs cover the 2 meter, 220 and 440 bands and come complete with antennas, battery, charger and accessories.

In addition, several new sponsors have signed on to this year's Hamfest. They include **Mouser Electronics**, **The Wireman** and **KB6NU Ham Radio Study Guides**. Returning sponsors include **KJI Electronics**, **LDG Electronics**, **DX Engineering**, **Main Trading Company (MTC)**, **N3FJP Amateur Radio Software**, **The RF Adapter Guy**, and **MFJ Enterprises**. The prizes they have provided range from shack accessories to gift certificates.

"Our sponsor have been great and have done much to help us ensure that we have our biggest Hamfest ever," said club Treasurer Bryan Jackson, W2RBJ. "They've been super supportive and very generous. Frankly, their involvement is what makes our event so good and well attended every year. As always, we urge our members and fellow hams to patronize our sponsors for all their Amateur Radio needs."

Although job assignments for the Hamfest have already been made, they will need to be reconfirmed as the new August date draws nearer. "I expect most of our plans will remain in place, but we'll be prepared to make any changes that may be needed," said Scorsone.

2020 Hamfest Sponsors



No Compromises

There's no compromises with Wouxun's KG-UVN1 Dual Band DMR Digital Two Way HT radio!

Whether you're looking to run DMR or analog, the KG-UVN1 has you covered. It's feature-packed with all the benefits of a high-end Digital Mobile Radio that also keeps your analog connections -- all in one portable handheld transceiver!

The Wouxun KG-UVN1 works with other makes and models of DMR radios with both Tier I & II compatibility -- as well as compatibility with existing analog systems on the supported UHF and VHF Amateur Radio bands.

Add to that 3072 channels, 250 zones, and a whopping 160,000 contacts -- and the full radioid.net contact database is preloaded! The KG-UVN1 has CTCSS/DCS, digital encryption, channel scan, group scan and text messaging. It also features VOX, a full DTMF keypad, programmable multi-function side keys, and much, much more.

The KG-UVN1 offers high-end functionality throughout, including independent programming in VFO and channel modes, Private Call, Group Call, All Call, ARTS function, tail elimination, menu encryption, menu hide, and stun/kill/activate options. Plus, it has solid, rugged construction that puts it in the same league as commercial class radios for performance, reliability and durability.

Wouxun's KG-UVN1
Big Performance, No Compromises



*Visit www.WOUXUN.com
for full details and specs,
plus the full line of accessories!*

On the Beam

News & Notes

Virus Concerns Cancel Dayton Hamvention for First Time Ever



For the first time in its 68-year history, Dayton Hamvention® will not take place this year, due to concerns about the coronavirus outbreak. The glum news was not entirely unexpected, given widespread cancellations of public gatherings and a national state of emergency.

“The Hamvention Executive Committee has been monitoring the COVID19 pandemic. We have worked very closely with our local and state health departments. It is with a very heavy heart the Hamvention Executive Committee has decided to cancel Hamvention for this year,” said event Chair Jack Gerbs, WB8SCT, on March 15th.

“This decision is extremely difficult for us, but with around two months until the Great Gathering we felt this action necessary. More specific details regarding the closure will soon be posted. Thank you for your understanding in this time of international crisis.”

The Dayton Hamvention cancellation came less than a week after the International DX Convention in Visalia, California, called off this year's show. The Dayton Amateur Radio Association (DARA) sponsors Hamvention.

Since 2017, Hamvention has been held each May at the Greene County Fairgrounds and Expo Center in Xenia, Ohio. The international gathering attracted more than 32,000 visitors in 2019.

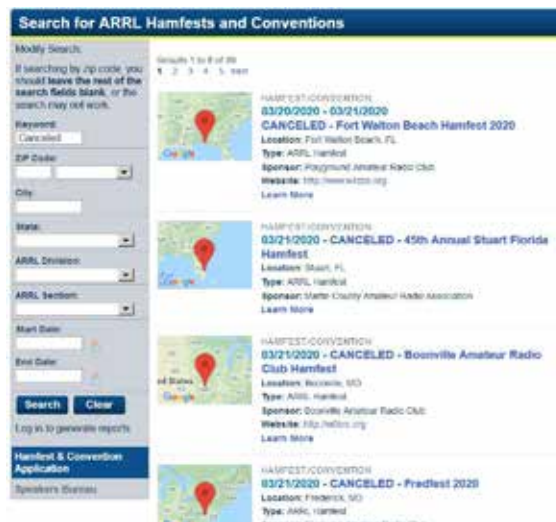
Hamvention's announcement has caused the cancellation of other associated events, including Contest University, the Contest Dinner, and the Top Band Dinner.

ARRL Lists Canceled Hamfests On-Line

With dozens of Hamfests already canceled -- and more being added every day -- the ARRL has set up a special section of its website to list those that have been forced to pull the plug because of the Covid-19 virus outbreak.

The cancellation listings can be accessed through a link on the League's home page at www.ARRL.org, or by visiting <http://www.arrl.org/canceledHamfests.php>. The listings can be sorted by city, state, zip code, ARRL division and by date.

As of the end of March, there were some 40 Hamfests that had been canceled across the nation. Meanwhile, EGARA is working to spread the word that its 19th annual Hamfest has been re-scheduled from May 9th to August 29th.



EGARA March Meeting Minutes

- The Wednesday, March 11th membership meeting of the club was canceled as a precaution because of concerns about the coronavirus outbreak;
- The Board met as scheduled on Monday, March 9th to clean the Masonic Lodge and to discuss agenda items, including possibly moving the date of the May 9th EGARA Hamfest. It was decided to contact the East Greenbush Fire Department to determine what other dates might be available for use of its grounds and pavilion for the Hamfest;
- In response to continued requests to refrain from holding group meetings, the April membership meeting will be held as scheduled on April 8th, however it will be held on the air using the club's 147.270 repeater. The meeting will begin at 7 pm and following the meeting agenda listed below:

On-the-air –Meeting Agenda for April 8th

Use the club's VHF repeater 147.270 (+) PL 94.8

1. Call to order and announcement of meeting format
2. Check-ins
3. Check-ins acknowledged
4. Minutes
5. Treasurer's report
6. Election of officers
7. New business
8. Old business
9. Committee reports
10. General discussion, Q & A
11. Closing
(see full details on page 12)

--de Steve VanSickle WB2HPR / Secretary

ARRL Suspending Tours and Guest Visits to Headquarters, W1AW

As part of efforts under way to help protect the health and safety of ARRL Headquarters employees and volunteers from the impacts of the coronavirus, ARRL has decided to suspend all tours and guest visits to Hiram Percy Maxim Memorial Station W1AW, as well as to ARRL Headquarters in Newington, CT. The suspension became effective Monday, March 16 and will continue until further notice.

In a post on its website and by email, the League said:

"We apologize for any inconvenience this may cause to our members and their guests who had been planning to visit us in Newington, Connecticut. We feel, however, that this is a necessary precaution and is in keeping with the guidance being provided by federal and local health professionals."

"We appreciate everyone's patience and understanding as we all endeavor to deal with this difficult public health situation."

How The National Bureau Of Standards Helped Make “Radio”

This was originally published as “NIST’s Role in the Early Decades of Radio (1911-1933)” on the National Institute of Science and Technology’s blog, Taking Measure

Even if you weren’t able to watch the recent Super Bowl on TV, you could still listen to the play-by-play commentary on the radio. But radio does more than just broadcasting sporting events or playing music. It plays a major role in emergency response, navigation and science.

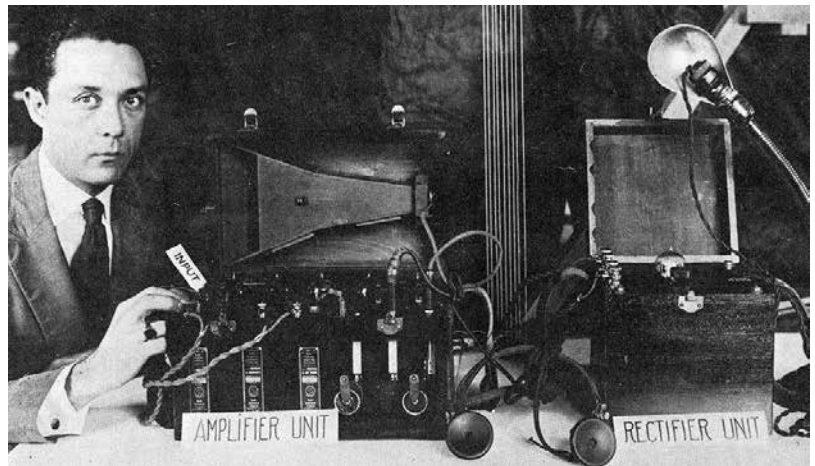
The word “radio,” however, didn’t become part of our regular vocabulary until 1911, and it happened thanks in part to Howard Dellinger, a radio scientist at the National Bureau of Standards (NBS), the agency that became the National Institute of Standards and Technology (NIST). This came about when the second International Radiotelegraph Conference was being planned in London, and a professor sent Dellinger a paper that he was going to present to the conference for review.

At the time, “wireless” was used as the term for radio communication, especially by the British. However, NIST was charged with revising standards in preparation for the conference, and Dellinger suggested that the professor use “radio,” which was already becoming a popular word in the U.S., instead of “wireless.” The professor agreed, and the word “radio” went on to become the universally accepted term.

Dellinger not only played a role in popularizing the word “radio,” but he also played a role in the first radio work done at NIST. A commercial company asked NIST to calibrate a wavemeter, a device developed by one of its engineers that measures electromagnetic waves like those of radio. Dellinger was known as the wireless expert and took on the project of calibrating the first radio instrument at NIST.

A New Type of Radio Receiver

But for radio to become mainstream, it first had to be commercialized, which began with its introduction into households. However, the challenge was building a radio set that used the electrical current, called alternating current (AC), which powered lights, fans and kitchen appliances when plugged into wall sockets. The predecessor to this technology was developed and patented by two researchers, Percival D. Lowell and Francis W. Dunmore, at NBS in 1922. They called their invention the “mousetrap.”



The “mousetrap” was a receiver for a radio amplifier that could run on AC. This was considered a breakthrough because at that time radios were only able to be powered by direct current (DC) provided by batteries. These batteries were bulky and heavy, had to be charged from time to time and were considered dangerous because of the acid used in them. The researchers’ prototype meant the radio could be used in homes without causing damage and with the same performance quality.

-continued on page 8-

... How The National Bureau Of Standards Helped Make “Radio”

Lowell and Dunmore filed two more patents together for other innovations, and for the “mousetrap” they sold the rights to the Dubilier Condenser Corporation. Little did they know that, because there was no uniform policy on patents issued to government employees, their actions would result in more than a decade of litigation over who legally had the rights to the patent.

While they were tied up in court, the Radio Corporation of America (RCA) developed its own model of the AC radio in 1926. Its model later became the first AC-powered radio sold to consumers.

Flying by Radio

During the early years of flight navigation, NIST was doing research to assist pilots while they were flying and landing. Pilots needed three things to get their bearings when flying “blind,” meaning it’s foggy, too dark or too cloudy to see. They needed to know the longitudinal position, altitude and speed of the aircraft, which were all achieved by various beacons installed in the plane. The remaining issue was that there were two frequencies the pilot constantly had to switch between the frequency that the Department of Commerce used to send weather information to planes and ships, which sometimes caused interference for pilots, and the frequency the radio beacon operated on, which gave altitude and other information.

Dunmore created a prototype, but Harry Diamond, a radio engineer who joined NIST in 1927, completed the device, called the radio guidance system. Diamond solved the problem by developing a separate device that allowed for voice communication to the pilot without receiving any outside interference from ships’ radios.

A Curtiss Fledgling, a trainer aircraft developed for the U.S. Navy, was equipped with the device, and flight tests were performed between NIST’s experimental air station at College Park, Maryland, and Newark Airport in New Jersey in foggy weather. After a series of successful tests were performed, the device was turned over to be used by the Department of Commerce in 1933.

Praise From a Famous Inventor

While mostly intended for serious users, some of NIST’s journals and publications were popular with the public. One such book, titled *The Principles Underlying Radio Communication*, covered topics such as elementary electricity, radio circuits and electromagnetic waves and was also published as a textbook for soldiers in the U.S. Army. The famous inventor Thomas Edison received a copy from NIST and wrote a letter thanking the first director, Samuel W. Stratton, for publishing it, saying it was “the greatest book on this subject that I have ever read.”

As these and other examples show, NIST had a significant influence on radio research between 1911 and 1933. However, NIST’s radio work didn’t end with the first blind landing. NIST would continue to contribute to the field leading up to and during World War II, and research continues to this day in areas such as 5G, public safety communications and spectrum sharing.

ABOUT THE AUTHOR: Alex Boss is a general assignment writer in the NIST Public Affairs Office and covers standard reference materials (SRM).

A Message from ARRL Hudson Division Director Ria Jairam, N2RJ

Greetings, Hudson Division!

Hope everyone is doing as well as we can.

These are trying times. Lots of clubs and hams have had to cancel everything due to COVID-19. We'd like to let you know that we are here to support you in whatever way we can.

It's also a good time to get on air. Ham radio can keep many from being socially isolated, especially senior citizens who are hard hit by the current situation. So pick up the mic, or the key, paddles or fire up that digital mode software and call CQ. Or get on the repeater and make a call. You never really know, you can brighten someone's day.

A huge thank you as well to our first responders and medical personnel (Doctors, nurses, EMTs etc) who are at the front lines. We appreciate you.

Ria can be reached at: n2rj@arrl.org



Virus Sparks Renewed Interest in Ham Radio, but Testing also a Problem

With the spread of the Covid-19 virus continuing to upend everyday life, it has also brought with it a renewed interest in Amateur Radio as people realize it still offers the ability to communicate when regular systems fail. Unfortunately, it comes at a time when many VE exams sessions have been forced to cancel, including EGARA's May 16th exam session.

According to FCC data, there had been a recent uptick in Ham licenses since the outbreak, but it has now been affected by the cancellation of exam sessions. Meanwhile, on-line Amateur Radio test preparation sites report a substantial surge in traffic.



In a comparison of the time period from March 5-13, 2020, to the same days in 2019, the number of persons signing up for amateur radio license courses on HamRadioPrep.com has soared more than 700% since news of the coronavirus outbreak dominated headlines.

At the same time, ARRL Volunteer Examiner Coordinator (VEC) Manager Maria Somma, AB1FM, anticipates that the number of new and upgraded radio amateurs will dip as VE teams cancel exam sessions due to coronavirus social distancing guidelines. She cited FCC Universal Licensing System (ULS) figures showing that new ham licenses granted for the first half of March totaled 1,298, while another 296 licensees upgraded. Those numbers are down from the 1,697 new ham licenses granted during the same period last year, which also saw 467 upgrades.

In response, some VE test organizations are turning to on-line testing or expanding their existing on-line offerings. For instance, the Anchorage, Alaska ARC VEC recently enhanced its ability to administer amateur radio license examinations using its web-based examination system, including approval to give exams outside of Alaska. However, it noted that its resources are limited and that lengthy delays in administering tests can be expected.

EGARA is currently working with ARRL to explore whether on-line testing of FCC exams is an option and what steps it might be able to take to implement such a system.

The History of Ham Radio: Armstrong in QST

Chris Codella, W2PA, author, John Pelham, W1JA, editor, Phil Johnson, W2SQ, editor

(Editor's note: By special arrangement with the authors, Sidebands is pleased to present this multi-part series on the history of ham radio. Subsequent chapters will be published in future monthly editions of the newsletter)

At age twenty-nine and already one of the most well-known radio engineers in the world, Edwin H. Armstrong was a veteran of the great war, and the president of the Radio Club of America. He was also professor of electrical engineering at Columbia University in New York City, where the R.C.A. was based and met regularly. Later recognized as one of the most important inventors in radio, Armstrong embodied the close relationship between amateur experimenters of the early years and leading academic and commercial radio researchers. In Armstrong's case they were the same person.

His article "A New Method for the Reception of Weak Signals at Short Wavelength" led the February 1920 issue of QST. It described a new receiving technique especially useful to hams of the time who were struggling with how to make use of signals that suffered two afflictions: they were very short in wavelength and very weak. He had developed the method while in the Army during the war.

Having presented the material at one of the R.C.A.'s regular meetings the previous December, he gave the ARRL permission to reprint it under an agreement with the League that dated back before the war to regularly publish such talks.



You get a strange feeling reading an article such as this. Looking in from the twenty-first century, you know how the technological story eventually unfolds in the years and decades that follow. You can't help but empathize with one of the great minds of the time as he struggles to extend the boundaries of the radio art, on the verge of discovering a new solution, being held back by the inadequacies of the available equipment.

Armstrong, an experienced author of peer-reviewed technical publications, concisely described a challenge that was of great interest to amateurs who wondered about the usability of wavelengths below 200 meters, the only direction for expansion available to them. His objective was to build a receiver that covered a wide range of wavelengths (600 to 50 meters), was easily tunable, and faithfully reproduced the characteristics of the transmitted signal. This last requirement meant that the receiver must not distort the original modulation of an undamped signal—or if a spark (damped) signal, it should reproduce the original note, the personal sound of an individual transmitter.

He explained that there were three usual direct methods of reception, none of which were satisfactory: (1) rectification (detection) of the radio-frequency (RF) signal, as in a crystal set, followed by amplification of the resulting audio; (2) reordering things to first amplify the RF signal followed by rectification; and (3) heterodyning directly down to audio frequencies. Heterodyning means mixing the original radio signal with another signal produced within the receiver but having a slightly higher or lower frequency. This produces an audio signal with a frequency that is the difference of the two mixed signals. If the two frequencies are close enough, you'd get a frequency (called a "beat" frequency) that was low enough to be audible to the human ear.

Since rectification was inherently inefficient at low signal levels, the first approach worked poorly with weak signals—and weak signals were what you most wanted to hear since the signals coming from the farthest distance would also be the weakest. To make things worse, low-frequency (audio) amplifiers in 1920 were inherently noisy, limiting how much amplification you could employ, and how much useful signal you could get in the headphones.

-continued on page 11-

Armstrong....

In the second method, rectification was more efficient with an RF signal that had first been amplified. However, inter-electrode capacitance in vacuum tubes confined their operation to longer wavelengths in simple circuits. If you added inductance to counter this effect, you would end up with a receiver that was cumbersome to tune and prone to internal oscillations.

The third method, heterodyning to get audio, seemed to be the best alternative, but in 1920 it was impractical because of the instability of the beat note; vacuum tube oscillators were quite unstable at short wavelengths (high frequencies) in both receivers and transmitters.

Armstrong introduced an in-between approach: heterodyne the original RF signal down to a frequency he described as “substantially above audibility,” in this case 100,000 cycles per second (or kc5), then pass it through amplification and rectification. The big advantage of this method was a greatly increased rectification or detection efficiency made possible by a much higher signal level after amplification. However, to use this for CW (undamped) reception, one must somehow modulate an unmodulated, undamped signal to make it audible since the detected frequency would be too high to hear. Even though a stable oscillator could be built for this lower frequency, using one to further heterodyne this intermediate frequency down to an audible one would not work since the resulting note would still depend on the stability of the oscillator used in the previous heterodyne step.

Once a desired operating frequency was chosen and tuned (he used 3 Mc, or 3 million cycles per second) the heterodyne signal, or local oscillator in today's terminology, could be adjusted for the most efficient rectification in the first stage, which, he wrote, was a non-critical adjustment. Of course it was only non-critical and did not need to be changed if one intended to stay on one frequency. Selectivity could be improved if the amplification stage was made regenerative and the coupling between stages was tuned.

As for spark (damped) signals, previous attempts using heterodyning resulted in the loss of the signal's original note—the characteristic buzzy tone produced by the frequency with which sparks were produced. The signal's note was lost because the efficiency of rectification (or mixing) in heterodyning depends strongly on the phase difference of the two signals being mixed. In spark, each “wave train” (each burst of RF energy after a spark) from the transmitter typically begins at a different, random phase angle, or point in the sinusoidal wave. Thus each wave train is heterodyned to a different, random level. Also, since the audio frequency beat note is so low compared to the (RF) frequency in both the wave train and the local oscillator, there is no time to complete even part of one cycle of a beat note. Both effects result in a random hissing sound at the receiver when listening to a spark signal, difficult to listen to and decode and difficult to distinguish from other nearby signals.

With a much higher beat note as in his new design, several beats per wave train could be produced, the phase difference would therefore vary through several cycles, and so the initial phase of each wave train mattered much less. The note of the original spark signal was thus preserved. In fact, to the listener, the difference in the characteristic notes of individual transmitters was even more noticeable than when using a simple crystal detector.

Armstrong goes on to describe other variations of this method of reception, including using multiple stages of different intermediate frequencies. The basic idea of using an intermediate frequency would become standard practice and have many subsidiary benefits in receiver design, perhaps only some of which Armstrong himself understood fully at this early point. More than ninety years later these basic principles can be found in the design of a majority of receivers of all sorts, including cell phones and satellites, garage door openers and wireless computer networks (not to mention actual radios and televisions). While acknowledging the work of others upon which he had built, he asserted that “the application of the principle to the reception of short waves is, I believe, new and it is for this reason that this paper is presented.” That is, presented to the people who needed it most and prompted its development: his fellow amateurs.

Though constrained by crude components, Armstrong was changing the fundamental nature of the radio art before his thirtieth birthday.



A New Method for the Reception of Weak Signals at Short Wave Lengths †

By Edwin H. Armstrong, E. E.*

THE problem of receiving weak signals of short wave length in a practical manner has become of great importance in recent years. This is especially true in connection with direction finding work where the receiver must respond to a very small fraction of the energy which can be picked up by a long antenna.

The problem may be summed up in the following words:—construct a receiver for undamped, modulated continuous and damped oscillations which is substantially equally sensitive over a range of wave length from 100-500 meters, which is capable of rapid adjustment from one wave to another, and which does not distort or lose any characteristic note or tone inherent in the transmitter.

It is, of course, obvious that some form of amplification must be used but a study of the various known methods, soon convinces one that a satisfactory solution cannot be obtained by any direct method. In the interests of completeness we will consider the three well known direct means which might possibly be employed, and examine the limitations which apply to each. These three methods are—

- (1) Amplification of the low frequency current after rectification;
- (2) Amplification of the high frequency current before rectification; and
- (3) Application of the heterodyne principle to increase the efficiency of rectification.

Of course the first method of rectifying the high frequency current and amplifying the resulting low frequency current. Two limitations at once present themselves, one inherent in low frequency amplifiers and the other inherent in all known rectifiers. The limitation in the amplifier is the residual noise which makes it impractical to use effectively more than two stages of amplification. The second limitation lies in the characteristics of the detector or rectifier. All rectifiers have a characteristic such that the rectified or low frequency current is roughly proportional to the square of the impressed high frequency E. M. F. Hence the efficiency of rectification becomes increasingly poorer, the weaker the signal until a point is reached below which the detector practically ceases to respond.

The second method of attack on the problem is the amplification of the received high frequency currents before rectification to a point where they can be efficiently dealt with by the detector. This method is ideal on long waves and various methods of inductance, resistance and capacity couplings have been successfully used, but when the attempt is made to use the same methods of coupling on wave lengths from 200 to 500 it results in complete failure. This is because the low capacity reactance existing between the various elements of the tubes causes them, as effect, to act as a short circuit around the coupling means and thereby prevent the establishment of a difference of potential in the external plate circuit. It is therefore possible to eliminate the short-circuiting by tuning with a parallel inductance but this introduces a complication of adjustment which is highly objectionable. The tuning of all circuits also leads to difficulty with undesirable internal oscillations.

*President, Radio Club of America.
Presented at meeting of N. E. A. at Columbus, Ohio, Dec. 12, 1914. Published courtesy N. E. A. Copyright 1914, N. E. A.

On-Air Meeting Protocol for April 8th

To better understand how EGARA will conduct its "On-Air" membership meeting on April 8th, here is the net agenda that will be used. The meeting will be held using the club's 147.270 repeater (PL Tone 94.8).

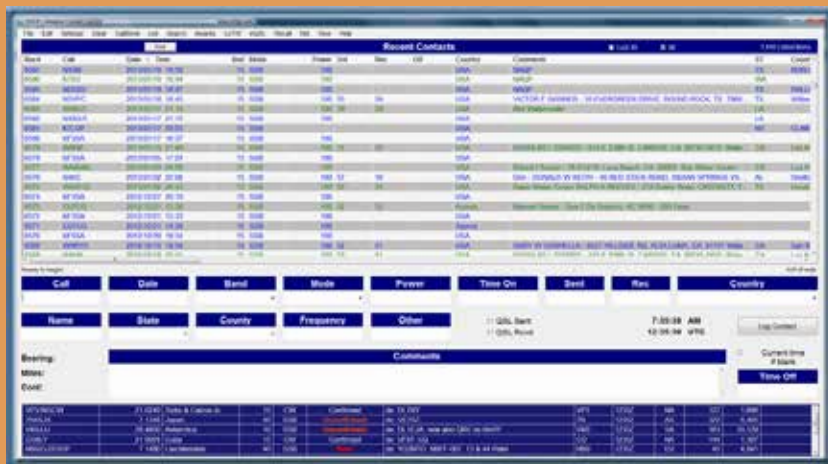
1. At 7:00 PM the net is called to order on 147.270 mhz;
2. Net Control will announce: This is the April 2020 on-the-air meeting of the East Greenbush Amateur Radio Association. This is station WB2HPR and I'll be acting as your net control, and my name is Steve. I will be taking check-ins from EGARA club members. Please do not break the net and direct your comments through net control. Remember that you are using a repeater --so wait for the carrier to drop out after the courtesy tone before you make your transmission. That way you won't time out the repeater;
3. At this time, we will begin check-ins. Please acknowledge when you hear your name and call letters announced. Net Control will read through the membership list.
4. We have the following stations checked in: list of stations will be repeated by Net Control;
5. Are there any additional check-ins?
6. We'll begin our meeting with the Minutes from March, followed by the Treasurers report. Then, we will hold our election of officers -- followed by a call for old business, then new business, and finally committee reports before we open up for additional comments and questions.
7. First, the Minutes: Last months meeting and program were cancelled out of an abundance of caution due to the covid-19 pandemic. The program was a radio workshop to assess the health and performance of members radios. The program will be offered again at a future meeting.
8. Now, Bryan, W2RBJ will give his Treasurers report. (Report given) Thank you, Bryan for your report.
9. The election of officers follows: A call for nominations was made via email and the nominations are now closed. The following nominees have volunteered for offices as follows: President: Bryan Jackson W2RBJ; Vice President: Nick Field KD2JCR; Secretary: Steve VanSickle WB2HPR; Treasurer: Don Mayotte, KB2CDX. President Emeritus Tom Scorsone, KC2FCP, will become President Emeritus upon the election of a new President. Since no other nominations were received, the Secretary will cast 1 vote in favor of the slate of candidates if a motion is made by a club member. Do we have a motion?
10. The secretary casts one vote in favor of the proposed slate of candidates. Congratulations to our newly elected officers and thanks to Tom Scorsone KC2FCP for his leadership role over the last 19 years by serving as EGARA club president. "Thank you, Tom"
11. At this time, are there any stations with old business?
12. Do we have any new business?
13. Are there any Hamfest committee reports? (Bryan will update Hamfest business)
14. Does anyone have any comments or announcements for the NET?
15. Before we wrap up, I invite you to check the club website for any updated information regarding hamfests, meetings, and etcetera. The club web site can be found at www.EGARA.club. We now conclude this over-the-air meeting of the East Greenbush Amateur Radio Association. Thanks to all for your participation and we return the repeater back to general amateur use. 73

THERE HAS TO BE A BETTER WAY

CALL	START	his RST	FREQ
N8PDX	0554	58	7210
	STOP	my RST	MODE
	0404	59	LSB

500

11/1/16
 N8PDX Salem OR
 Jason
 100 w Icom 7100 - m
 AD DX CC 80-10 meters d'po - open
 worked for comml broadcast
 pilot - 2003 Tech
 band changing -
 QRT 73



(Luckily there is...)

**AMATEUR
CONTACT
LOG 6.6**

only from

N3FJP

SOFTWARE

www.n3fjp.com

Log your contacts fast and easy with N3FJP's fully customizable Amateur Contact Log 6.6.

It provides tracking of Worked All States, Worked All Counties, Worked All Countries, DXCC, VUCC, Grids, Zones, IOTAs, Lighthouses... and dozens of other features that can't be found anywhere else.

Plus, it interfaces with most Elecraft, Icom, Kenwood, Ten Tec and Yaesu radios!

So get rid of all that paper in your shack... and get Amateur Contact Log 6.6 today!

CALENDAR

April 8, 2020 - 7 pm - Monthly club meeting, on air via club repeater on 147.260, PL 94.8

Re-scheduled - EGARA Hamfest - Moved from May 9th to August 29th.

Canceled! May 16, 2020 - FCC Exam Session - Canceled due to closure of East Greenbush Library.

Pro Tip: Turn it OFF!

Your House is Full of Energy Vampires

Standby power is often called an "energy vampire" as these electronic items continue to use power even when turned off or idle – like that phone charger that stays plugged in all the time.

In fact, the average household spends \$100 per year to power devices that are in standby mode or off!

For Instance...

If you left your cable or satellite box (with DVR capabilities) plugged in and didn't turn it on for a year, the cost would be nearly \$45.

The average household spends \$100 a year to power devices that are in standby mode or off.

Plugging items like these into power strips that can be turned off with a single switch can save more than you think!



For Sale

- **Arrow Model 52-S4** - 4-Element 6 Meter Yagi antenna in good condition. \$75.00

For above, contact Steve at: svansick@nycap.rr.com

- **Johnson Valiant Transmitter AM & CW** - \$ 600.00
- **DX 60 Transmitter AM & CC With VFO** - \$ 125.00
- **DX 35 Transmitter AM & CW With VFO** - \$ 125.00
- **Eldico R124 Receiver** - \$300.00
- **MFJ Model 1995 Portable Antenna, 40 To 10 Meter** - \$75.00

- **Daiwa CN 103 L SWR power meter**, covers 140-525 mhz. Asking \$30.
- **Jetstream JTWXHF SWR/watt meter**, covers 106-60 mhz. Asking \$30.
- **Yesu HM-34 Speaker Mic**, Asking \$10.00.

Contact Walt Snyder at: n2wjr@earthlink.net

Gear to Sell, Swap or Buy?

Send your listing to W2RBJ@Outlook.com

Mark Your Calendar Hamfest August 29th

The East Greenbush Amateur Radio Association

Organized in 1998, by Bert Bruins, N2FPJ, (SK) and Chris Linck, N2NEH, the East Greenbush Amateur Radio Association, an ARRL affiliate, is committed to providing emergency services, educational programs, and operating resources to amateur radio operators and residents of the Capital Region of New York State. The club station is W2EGB. The club also has several VHF and UHF repeaters open to club members and the public.